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## 1 Routine/Function Prologues

### 1.1 Fortran: Module Interface *cmapdomain\_module.F90* (Source File: *cmapdomain\_module.F90*)

Contains routines and variables that define the native domain for CMAP precipitation product.

*INTERFACE:*

```
module cmapdomain_module
```

*USES:*

```
use cmapdrv_module
```

*ARGUMENTS:*

```
type(cmapdrvdec) :: cmapdrv
integer :: mi
real, allocatable :: rlat(:)
real, allocatable :: rlon(:)
integer, allocatable :: n11(:)
integer, allocatable :: n12(:)
integer, allocatable :: n21(:)
integer, allocatable :: n22(:)
real, allocatable :: w11(:,w12(:)
real, allocatable :: w21(:,w22(:)
```

---

#### 1.1.1 *defnatcmap.F90* (Source File: *cmapdomain\_module.F90*)

Defines the kgds array describing the native forcing resolution for CMAP data.

*REVISION HISTORY:*

11Dec2003: Sujay Kumar; Initial Specification

*INTERFACE:*

```
subroutine defnatcmap()
```

*USES:*

```
use lisdrv_module, only: lis
use time_module, only : date2time
implicit none
```

*ARGUMENTS:*

```
integer :: kgdsi(200)
integer :: updoy, yr1,mo1,da1,hr1,mn1,ss1
real :: upgmt
```

## CONTENTS:

```

call readcmapcrd(cmapdrv)
kgdsi = 0
kgdsi(1) = 4
kgdsi(2) = 512
kgdsi(3) = 256
kgdsi(4) = 89463
kgdsi(5) = 0
kgdsi(6) = 128
kgdsi(7) = -89463
kgdsi(8) = -703
kgdsi(9) = 703
kgdsi(10) = 128
kgdsi(20) = 255
call allocate_cmap_ip(lis%d%lnc*lis%d%lnr)
call def_cmap_ip_input(kgdsi)
yr1 = 2002      !grid update time
mo1 = 10
da1 = 29
hr1 = 12
mn1 = 0; ss1 = 0
call date2time(cmapdrv%griduptime1,updoy,upgmt,yr1,mo1,da1,hr1,mn1,ss1 )
cmapdrv%gridchange1 = .true.

```

---

**1.1.2 allocate\_cmap\_ip (Source File: *cmapdomain\_module.F90*)**

Allocates memory for CMAP interpolation variables

## INTERFACE:

```
subroutine allocate_cmap_ip(N)
```

## CONTENTS:

```

allocate(rlat(n))
allocate(rlon(n))
allocate(n11(n))
allocate(n12(n))
allocate(n21(n))
allocate(n22(n))
allocate(w11(n))
allocate(w12(n))
allocate(w21(n))
allocate(w22(n))
mo = n
nn = n

```

```
w11 = 0.0
w12 = 0.0
w21 = 0.0
w22 = 0.0
```

---

### 1.1.3 def\_cmap\_ip\_input (Source File: *cmapdomain\_module.F90*)

Calculates weights and neighbor information required for CMAP interpolation

INTERFACE:

```
subroutine def_cmap_ip_input (kgds)
```

USES:

```
use spmdMod
use lisdrv_module, only:lis
```

CONTENTS:

```
!-----
! Calls the routines to decode the grid description and
! calculates the weights and neighbor information to perform
! spatial interpolation. This routine eliminates the need to
! compute these weights repeatedly during interpolation.
!-----
mo = lis%d%lnc*lis%d%lnr
if(kgdso(1).ge.0) then
    call gdswiz(kgdso, 0,mo,fill,xpts,ypts,rlon,rlat,nn,0)
endif
call gdswiz(kgds,-1,nn,fill,xpts,ypts,rlon,rlat,nv,0)
do n=1,nn
    xi=xpts(n)
    yi=ypts(n)
    if(xi.ne.fill.and.yi.ne.fill) then
        i1=xi
        i2=i1+1
        j1=yi
        j2=j1+1
        xf=xi-i1
        yf=yi-j1
        n11(n)=ijkgdss(i1,j1,kgds)
        n21(n)=ijkgdss(i2,j1,kgds)
        n12(n)=ijkgdss(i1,j2,kgds)
        n22(n)=ijkgdss(i2,j2,kgds)
        if(min(n11(n),n21(n),n12(n),n22(n)).gt.0) then
            w11(n)=(1-xf)*(1-yf)
```

```
w21(n)=xf*(1-yf)
w12(n)=(1-xf)*yf
w22(n)=xf*yf
else
    n11(n)=0
    n21(n)=0
    n12(n)=0
    n22(n)=0
endif
else
    n11(n)=0
    n21(n)=0
    n12(n)=0
    n22(n)=0
endif
enddo
mi = cmapdrv%ncold*cmapdrv%nrold
endif
```